

WEST Search History

DATE: Wednesday, December 15, 2004

<u>Hide?</u>	<u>Set Name</u>	<u>Query</u>	<u>Hit Count</u>
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DB=PGPB,USPT; PLUR=YES; OP=ADJ

<input type="checkbox"/>	L10	L9 and avp1	4
<input type="checkbox"/>	L9	15 and (freez\$ or chill\$)	100
<input type="checkbox"/>	L8	15 and seed production	5
<input type="checkbox"/>	L7	15 and root	25
<input type="checkbox"/>	L6	L5 and (ppase or vppase)	8
<input type="checkbox"/>	L5	L4 and (proton or H+)	113
<input type="checkbox"/>	L4	L3 and plant	158
<input type="checkbox"/>	L3	L2 and transgenic	168
<input type="checkbox"/>	L2	L1 and (tonoplast or vacuol\$)	237
<input type="checkbox"/>	L1	pyrophosphatase	1599

END OF SEARCH HISTORY

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FILE 'HOME' ENTERED AT 09:45:57 ON 15 DEC 2004

=> s (ppase or pyrophosphatase) and plant?

THIS COMMAND NOT AVAILABLE IN THE CURRENT FILE

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=> file agricola caplus biosis
COST IN U.S. DOLLARS

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FILE 'AGRICOLA' ENTERED AT 09:46:53 ON 15 DEC 2004

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=> s (ppase or pyrophosphatase) and plant?
L1 1706 (PPASE OR PYROPHOSPHATASE) AND PLANT?

=> s l1 and tonoplast
L2 409 L1 AND TONOPLAST

=> del l2 y

=> s l1 and (tonoplast or vacuole)
L2 531 L1 AND (TONOPLAST OR VACUOLE)

=> s l2 and transgenic
L3 12 L2 AND TRANSGENIC

=> dup rem l3
PROCESSING COMPLETED FOR L3
L4 7 DUP REM L3 (5 DUPLICATES REMOVED)

=> d 1-7 ti

L4 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2004 ACS on STN
TI Enhanced meristematic activity and competence by overexpression of
tonoplast pyrophosphatase

L4 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2004 ACS on STN
TI Stress-resistant oversized **transgenic plants** capable
of growing in salinized soil

L4 ANSWER 3 OF 7 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 1
TI Drought- and salt-tolerant **plants** result from overexpression of
the AVP1 H⁺-pump.

L4 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2004 ACS on STN
TI Production of male sterile **plant** by using pollen-specific
promoter

L4 ANSWER 5 OF 7 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Identification and characterization of a novel vacuolar compartment in
Nicotiana tabacum.

L4 ANSWER 6 OF 7 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2
TI The role of sugar accumulation in leaf frost hardiness - investigations
with **transgenic** tobacco expressing a bacterial
pyrophosphatase or a yeast invertase gene

L4 ANSWER 7 OF 7 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 3
TI Light-stimulated proton transport into the vacuoles of leaf mesophyll
cells does not require energization by the **tonoplast**
pyrophosphatase.

=> s avp1
L5 42 AVP1

=> s 15 and pyrophosphatase
L6 22 L5 AND PYROPHOSPHATASE

=> dup rem 16
PROCESSING COMPLETED FOR L6
L7 14 DUP REM L6 (8 DUPLICATES REMOVED)

=> d 1-10 ti

L7 ANSWER 1 OF 14 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI VOZ; Isolation and characterization of novel vascular plant transcription factors with a one-zinc finger from *Arabidopsis thaliana*.

L7 ANSWER 2 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1
TI Isolation and Characterization of TgVP1, a Type I Vacuolar H⁺-translocating **Pyrophosphatase** from *Toxoplasma gondii*. The dynamics of subcellular localization and the cellular effects of a diphosphonate inhibitor

L7 ANSWER 3 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
TI *Arabidopsis CAMTA* family proteins enhance V-PPase expression in pollen

L7 ANSWER 4 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
TI Use of *Arabidopsis thaliana* tps1 gene encoding trehalose-6-phosphate synthase as selection markers for transgenic plants with improved stress resistance

L7 ANSWER 5 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
TI Enhanced meristematic activity and competence by overexpression of tonoplast **pyrophosphatase**

L7 ANSWER 6 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
TI Functional complementation of yeast cytosolic **pyrophosphatase** by bacterial and plant H⁺-translocating pyrophosphatases

L7 ANSWER 7 OF 14 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Over-expression of the vacuolar H⁺-pump **AVP1** positively affects growth and development in *Arabidopsis*.

L7 ANSWER 8 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
TI Stress-resistant oversized transgenic plants capable of growing in salinized soil

L7 ANSWER 9 OF 14 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 2
TI Drought- and salt-tolerant plants result from overexpression of the **AVP1** H⁺-pump.

L7 ANSWER 10 OF 14 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 3
TI Pollen-specific regulation of vacuolar H⁺-PPase expression by multiple cis-acting elements.

=> d 7 ab

L7 ANSWER 7 OF 14 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

=> d 7 so

L7 ANSWER 7 OF 14 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

SO Plant Biology (Rockville), (2002) Vol. 2002, pp. 95-96. print.
Meeting Info.: Annual Meeting of the American Society of Plant Biologists on Plant Biology. Denver, CO, USA. August 03-07, 2002. American Society of Plant Biologists.

=> d 8 ab

L7 ANSWER 8 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN

AB A stress resistant, oversized, transgenic plant capable of growing in salinized media comprising a polynucleotide sequence causing upregulated express of vacuolar **pyrophosphatase**. Further disclosed, is the seed produced by such transgenic plants which comprises such polynucleotide sequence, and progeny plants grown from such seed. Thus, tomato plants, transformed with the genes AVP-1 which encodes for an inorg. **pyrophosphatase** and NHX-1 which encodes for a sodium transporter, demonstrated higher intracellular cation concns. when grown in saline soils.

=> d 8 so

L7 ANSWER 8 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN

SO PCT Int. Appl., 68 pp.
CODEN: PIXXD2

=> d 8 pi

L7	ANSWER 8 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001033945	A1	20010517	WO 2000-US30955	20001110	
	WO 2001033945	C1	20020725			
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM					
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG					
	CA 2390719	AA	20010517	CA 2000-2390719	20001110	
	BR 2000015636	A	20020709	BR 2000-15636	20001110	
	EP 1231831	A1	20020821	EP 2000-980337	20001110	
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR					
	JP 2003516727	T2	20030520	JP 2001-535966	20001110	
	NZ 519362	A	20040528	NZ 2000-519362	20001110	
	CA 2418127	AA	20020228	CA 2001-2418127	20010324	
	WO 2002015674	A1	20020228	WO 2001-US9548	20010324	
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,					

CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
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 LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
 SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
 YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
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 AU 2001050974 A5 20020304 AU 2001-50974 20010324
 EP 1315410 A1 20030604 EP 2001-924311 20010324
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 BR 2001013466 A 20040217 BR 2001-13466 20010324
 US 2002178464 A1 20021128 US 2001-834998 20010413
 US 2002023282 A1 20020221 US 2001-934088 20010820
 CA 2419901 AA 20020228 CA 2001-2419901 20010820
 WO 2002016558 A1 20020228 WO 2001-US41806 20010820
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
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 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
 RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US,
 UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 AU 2001085459 A5 20020304 AU 2001-85459 20010820
 EP 1315795 A1 20030604 EP 2001-964622 20010820
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 BR 2001013467 A 20040406 BR 2001-13467 20010820

=> d 9 ab

L7 ANSWER 9 OF 14 AGRICOLA Compiled and distributed by the National
 Agricultural Library of the Department of Agriculture of the United States
 of America. It contains copyrighted materials. All rights reserved.
 (2004) on STN DUPLICATE 2
 AB Transgenic plants overexpressing the vacuolar H⁽⁺⁾-**pyrophosphatase**
 are much more resistant to high concentrations of NaCl and to water
 deprivation than the isogenic wild-type strains. These transgenic plants
 accumulate more Na⁽⁺⁾ and K⁽⁺⁾ in their leaf tissue than the wild type.
 Moreover, direct measurements on isolated vacuolar membrane vesicles
 derived from the **AVP1** transgenic plants and from wild type
 demonstrate that the vesicles from the transgenic plants have enhanced
 cation uptake. The phenotypes of the **AVP1** transgenic plants
 suggest that increasing the vacuolar proton gradient results in increased
 solute accumulation and water retention. Presumably, sequestration of
 cations in the vacuole reduces their toxic effects. Genetically engineered
 drought- and salt-tolerant plants could provide an avenue to the
 reclamation of farmlands lost to agriculture because of salinity and a
 lack of rainfall.

=> d 9 so

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 Agricultural Library of the Department of Agriculture of the United States
 of America. It contains copyrighted materials. All rights reserved.
 (2004) on STN DUPLICATE 2
 SO Proceedings of the National Academy of Sciences of the United States of
 America, Sept 25, 2001. Vol. 98, No. 20. p. 11444-11449
 Publisher: Washington, D.C. : National Academy of Sciences,

=> d 10 ab

L7 ANSWER 10 OF 14 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN

DUPLICATE 3

AB We dissected the regulatory region of the **AVP1** gene encoding the vacuolar H⁺-**pyrophosphatase** (V-PPase) of *Arabidopsis thaliana* by using a GUS-reporter assay system. The cloned 1.4 kb 5'-regulatory region in the GUS-reporter transgenic plants was sufficient for the light-induced repression. Furthermore, the 1.4 kb regulatory region was active in all tissues examined and its activity was especially enhanced in pollen, whereas the shorter 0.4 kb regulatory region was active only in pollen. Further detailed analyses revealed that the GUS activity in pollen was regulated by at least three *cis*-acting regions in an additive or synergistic manner. These findings establish a distinct mechanism of the tissue-specific regulation of V-PPase expression in developing pollen, and imply the biological significance of the V-PPase in pollen maturation.

=> d 11-14 ti

L7 ANSWER 11 OF 14 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

TI Increased size, salt and drought tolerance in *A. thaliana* overexpressing **AVP1** vacuolar H⁺- **pyrophosphatase**.

L7 ANSWER 12 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 4

TI **AVP2**, a sequence-divergent, K⁺-insensitive H⁺-translocating inorganic **pyrophosphatase** from *Arabidopsis*

L7 ANSWER 13 OF 14 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

TI Gene regulation of vacuolar proton **pyrophosphatase**: Identification of pollen-specific regulatory region.

L7 ANSWER 14 OF 14 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN

DUPLICATE 5

TI The *Arabidopsis thaliana* proton transporters, *AtNhx1* and **Avp1**, can function in cation detoxification in yeast.

=> d 11 ab

L7 ANSWER 11 OF 14 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

=> d 11 so

L7 ANSWER 11 OF 14 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

SO Plant Biology (Rockville), (2001) Vol. 2001, pp. 85. print.
Meeting Info.: Joint Annual Meetings of the American Society of Plant Biologists and the Canadian Society of Plant Physiologists. Providence, Rhode Island, USA. July 21-25, 2001. American Society of Plant Biologists; Canadian Society of Plant Physiologists.

=> d 12 ab

L7 ANSWER 12 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 4
AB Plant vacuolar H⁺-translocating inorg. pyrophosphatases (V-PPases; E.C. 3.6.1.1) have been considered to constitute a family of functionally and structurally monotonous intrinsic membrane proteins. Typified by **AVP1** from *Arabidopsis*, all characterized plant V-PPases share greater than 84% sequence identity and catalyze K⁺-stimulated H⁺ translocation. Here we describe the mol. and biochem. characterization of AVP2 (accession number AF182813), a sequence-divergent (36% identical) K⁺-insensitive, Ca²⁺-hypersensitive V-PPase active in both inorg. pyrophosphate hydrolysis and H⁺ translocation. The differences between AVP2 and **AVP1** provide the first indication that plant V-PPases from the same organism fall into two distinct categories. Phylogenetic analyses of these and other V-PPase sequences extend this principle by showing that AVP2, rather than being an isoform of **AVP1**, is but one representative of a novel category of AVP2-like (type II) V-PPases that coexist with **AVP1**-like (type I) V-PPases not only in plants, but also in apicomplexan protists such as the malarial parasite *Plasmodium falciparum*.

=> d 12 so

L7 ANSWER 12 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 4
SO Plant Physiology (2000), 123(1), 353-362
CODEN: PLPHAY; ISSN: 0032-0889

=> d 13 ab

L7 ANSWER 13 OF 14 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

=> d 13 so

L7 ANSWER 13 OF 14 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
SO Plant Biology (Rockville), (2000) Vol. 2000, pp. 187. print.
Meeting Info.: Annual Meeting of the American Society of Plant Physiologists. San Diego, California, USA. July 15-19, 2000. American Society of Plant Physiologists (ASPP).

=> dis his

(FILE 'HOME' ENTERED AT 09:45:57 ON 15 DEC 2004)

FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 09:46:53 ON 15 DEC 2004
L1 1706 S (PPASE OR PYROPHOSPHATASE) AND PLANT?
L2 531 S L1 AND (TONOPLAST OR VACUOLE)
L3 12 S L2 AND TRANSGENIC
L4 7 DUP REM L3 (5 DUPLICATES REMOVED)
L5 42 S AVP1
L6 22 S L5 AND PYROPHOSPHATASE
L7 14 DUP REM L6 (8 DUPLICATES REMOVED)

=> s 12 and (salt or freez? or seed or drought)
L8 102 L2 AND (SALT OR FREEZ? OR SEED OR DROUGHT)

=> s 18 and (toler? or resist?)
L9 50 L8 AND (TOLER? OR RESIST?)

=> dup rem 19
PROCESSING COMPLETED FOR L9
L10 29 DUP REM L9 (21 DUPLICATES REMOVED)

=> d 1-10 ti

L10 ANSWER 1 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
TI Effect of **salt** and osmotic stresses on the expression of genes
for the vacuolar H⁺-**pyrophosphatase**, H⁺-ATPase subunit A, and
Na⁺/H⁺ antiporter from barley

L10 ANSWER 2 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1
TI Transport proteins and **salt tolerance** in
plants

L10 ANSWER 3 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2
TI Study on the **salt** and **drought tolerance** of
Suaeda salsa and Kalanchoe clairmontiana under iso-osmotic **salt**
and water stress

L10 ANSWER 4 OF 29 AGRICOLA Compiled and distributed by the National
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(2004) on STN DUPLICATE 3
TI Increased vacuolar Na⁺/H⁺ exchange activity in Salicornia bigelovii Torr.
in response to NaCl.

L10 ANSWER 5 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 4
TI Relationship between **tonoplast** H⁺-ATPase activity, ion uptake
and calcium in barley roots under NaCl stress

L10 ANSWER 6 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 5
TI Effect of K⁺ nutrition on growth and activity of leaf **tonoplast**
V-H⁺-ATPase and V-H⁺-**PPase** of Suaeda salsa under NaCl stress

L10 ANSWER 7 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
TI Stress-**resistant** oversized transgenic plants capable
of growing in salinized soil

L10 ANSWER 8 OF 29 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 6
TI **Drought- and salt-tolerant plants**
result from overexpression of the AVP1 H⁺-pump.

L10 ANSWER 9 OF 29 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 7
TI Effects of **salt** treatment and osmotic stress on V-ATPase and V-
PPase in leaves of the halophyte Suaeda salsa.

L10 ANSWER 10 OF 29 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 8
TI Isolation and characterization of a Na⁺/H⁺ antiporter gene from the
halophyte Atriplex gmelini.

=> d ab

L10 ANSWER 1 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN

AB Two cDNA clones encoding vacuolar H⁺-inorg. **pyrophosphatase** (HVP1 and HVP10), one clone encoding the catalytic subunit (68 kDa) of vacuolar H⁺-ATPase (HvVHA-A), and one clone encoding vacuolar Na⁺/H⁺ antiporter (HvNHX1) were isolated from barley (*Hordeum vulgare*), a **salt-tolerant** crop. Salt stress increased the transcript levels of HVP1, HVP10, HvVHA-A, and HvNHX1, and osmotic stress also increased the transcript levels of HVP1 and HvNHX1 in barley roots. The transcription of HVP1 in response to salt stress was regulated differently from that of HVP10. In addition, the HVP1 expression changed in a pattern similar to that of HvNHX1 expression. These results indicate that the expression of HVP1 is coordinated with that of HvNHX1 in barley roots in response to salt and osmotic stresses.

=> d so

L10 ANSWER 1 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
SO Journal of Experimental Botany (2004), 55(397), 585-594
CODEN: JEBOA6; ISSN: 0022-0957

=> d 2 ab

L10 ANSWER 2 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1
AB A review. Evidence indicates that **plant salt tolerance** operates at a cellular level. Commonly proposed cellular mechanisms include ion sequestration in vacuoles or ion exclusion at plasma membranes. Plasma membrane ATPase and vacuolar ATPase and **pyrophosphatase** are proton pumps that provide an energy source for transport of ions across the plasma membrane and **tonoplast**, resp. Membrane Na⁺/H⁺ antiporters take advantage of the proton gradient formed by these pumps to exchange Na⁺ for H⁺ across a membrane. Therefore, activity and expression of these proton pumps and Na⁺/H⁺ antiporters are investigated in numerous **plant** species under saline environment. In this review, information is presented on responses of **tonoplast** and plasma membrane ATPases and Na⁺/H⁺ antiporters to salinity. Inconsistencies exist in some of the information and this may be due to differences in cultivars, exptl. conditions, salt level used and **plant** age. Correlation between increased activity and expression of these transport proteins and adaptation to salinity is proposed, although this correlation is based on untested hypotheses. This precludes a general conclusion to be drawn concerning the involvement of membrane transport systems in **plant salt tolerance**. It is obvious that further extensive studies are needed in this area.

=> d 2 so

L10 ANSWER 2 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1
SO Plant Science (Shannon, Ireland) (2003), 164(6), 891-900
CODEN: PLSCE4; ISSN: 0168-9452

=> d 5 ab

L10 ANSWER 5 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 4
AB The relationship between **tonoplast** H⁺-ATPase activity, ion uptake, and Ca in barley roots under NaCl stress was studied. Under NaCl stress for 2 d, H⁺-ATPase activity was increased, and H⁺-PPase activity was decreased in the **tonoplast** of **salt-tolerant** barley (*Hordeum vulgare* L. cv. "Tanyin 2") roots. La³⁺ (1 mmol/L), an inhibitor of Ca²⁺ channel in plasma membrane, and EGTA (5 mmol/L), a Ca²⁺ chelator, inhibited this NaCl-induced increase in

H₊-ATPase activity but stimulated the H₊-PPase activity. Treatment of barley roots with CaM antagonist also diminished the increase of H₊-ATPase activity induced by NaCl. La³⁺, TFP, or La³⁺ + TFP increased Na⁺ uptake and decreased K⁺ and Ca²⁺ uptake in barley roots under NaCl stress. These results suggested that the activation of **tonoplast** H₊-ATPase and the regulation of Na⁺ and K⁺ uptake under NaCl stress may be related to Ca²⁺-CaM system.

=> d 5 so

L10 ANSWER 5 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 4
 SO Acta Botanica Sinica (2002), 44(6), 667-672
 CODEN: ABSCG9; ISSN: 1672-6650

=> d 7 ab

L10 ANSWER 7 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
 AB A stress **resistant**, oversized, transgenic **plant** capable of growing in salinized media comprising a polynucleotide sequence causing upregulated express of vacuolar **pyrophosphatase**. Further disclosed, is the **seed** produced by such transgenic **plants** which comprises such polynucleotide sequence, and progeny **plants** grown from such **seed**. Thus, tomato **plants**, transformed with the genes AVP-1 which encodes for an inorg. **pyrophosphatase** and NHX-1 which encodes for a sodium transporter, demonstrated higher intracellular cation concns. when grown in saline soils.

=> d 7 so

L10 ANSWER 7 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
 SO PCT Int. Appl., 68 pp.
 CODEN: PIXXD2

=> d 7 pi

L10	ANSWER 7 OF 29	CAPLUS	COPYRIGHT 2004	ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001033945	A1	20010517	WO 2000-US30955	20001110
	WO 2001033945	C1	20020725		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	CA 2390719	AA	20010517	CA 2000-2390719	20001110
	BR 2000015636	A	20020709	BR 2000-15636	20001110
	EP 1231831	A1	20020821	EP 2000-980337	20001110
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2003516727	T2	20030520	JP 2001-535966	20001110
	NZ 519362	A	20040528	NZ 2000-519362	20001110
	CA 2418127	AA	20020228	CA 2001-2418127	20010324
	WO 2002015674	A1	20020228	WO 2001-US9548	20010324
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				

CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
 HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
 LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
 SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
 YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 AU 2001050974 A5 20020304 AU 2001-50974 20010324
 EP 1315410 A1 20030604 EP 2001-924311 20010324
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 BR 2001013466 A 20040217 BR 2001-13466 20010324
 US 2002178464 A1 20021128 US 2001-834998 20010413
 US 2002023282 A1 20020221 US 2001-934088 20010820
 CA 2419901 AA 20020228 CA 2001-2419901 20010820
 WO 2002016558 A1 20020228 WO 2001-US41806 20010820
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
 RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US,
 UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 AU 2001085459 A5 20020304 AU 2001-85459 20010820
 EP 1315795 A1 20030604 EP 2001-964622 20010820
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 BR 2001013467 A 20040406 BR 2001-13467 20010820

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L10 ANSWER 9 OF 29 AGRICOLA Compiled and distributed by the National
 Agricultural Library of the Department of Agriculture of the United States
 of America. It contains copyrighted materials. All rights reserved.
 (2004) on STN DUPLICATE 7
 AB The Chenopodiaceae *Suaeda salsa* L. was grown under different **salt**
 concentrations and under osmotic stress. The fresh weight was markedly
 stimulated by 0.1 M NaCl, 0.4 M NaCl and 0.1 M KCl and reduced by osmotic
 stress (PEG iso-osmotic to 0.1 M NaCl). Treatment with 0.4 M KCl severely
 damaged the **plants**. Membrane vesicle fractions containing
tonoplast vesicles were isolated by sucrose gradient from leaves
 of the *S. salsa* **plants** and modulations of V-ATPase and V-
 PPase depending on the growth conditions were determined. Western
 blot analysis revealed that V-ATPase of *S. salsa* consists of at least nine
 subunits (apparent molecular masses 66, 55, 52, 48, 36, 35, 29, 18, and 16
 kDa). This polypeptide pattern did not depend on culture conditions. V-
 PPase is composed of a single polypeptide (69 kDa). An additional
 polypeptide (54 kDa) was detected in the fractions of NaCl-, KCl- and
 PEG-treated **plants**. It turned out that the main strategy of
salt-tolerance of *S. salsa* seems to be an up-regulation
 of V-ATPase activity, which is required to energize the **tonoplast**
 for ion uptake into the **vacuole**, while V-PPase plays
 only a minor role. The increase in V-ATPase activity is not obtained by
 structural changes of the enzyme, but by an increase in V-ATPase protein
 amount.

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(2004) on STN

DUPLICATE 7

SO Journal of experimental botany, Dec 2001. Vol. 52, No. 365. p. 2355-2365
Publisher: Oxford : Oxford University Press.
CODEN: JEBOA6; ISSN: 0022-0957

=> d 11-20 ti

L10 ANSWER 11 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
TI Effects of NaCl stress on the **tonoplast** ATPase and **PPase** activity in roots, sheaths and blades of sorghum seedlings

L10 ANSWER 12 OF 29 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2004) on STN
TI The *Arabidopsis thaliana* proton transporters, AtNhxl and Avp1, can function in cation detoxification in yeast.

L10 ANSWER 13 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 9
TI Effect of NaCl, glutathione and ascorbic acid on function of **tonoplast** vesicles isolated from barley leaves

L10 ANSWER 14 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 10
TI Effects of fatty acids on lipid composition and function of **tonoplast** vesicles in barley seedlings under **salt** stress

L10 ANSWER 15 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 11
TI Effects of NaCl stress on H⁺-ATPase and H⁺-**PPase** activities of **tonoplast**-enriched vesicles isolated from the roots of **salt-tolerant** mutant of wheat and its wild type

L10 ANSWER 16 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 12
TI Na⁺/H⁺ antiporter in **tonoplast** vesicles from rice roots

L10 ANSWER 17 OF 29 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Vacuolar sodium accumulation in *Salicornia bigelovii* Torr.

L10 ANSWER 18 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
TI The role of sugar accumulation in leaf frost hardiness - investigations with transgenic tobacco expressing a bacterial **pyrophosphatase** or a yeast invertase gene

L10 ANSWER 19 OF 29 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2004) on STN
TI Plasma membrane isolation from freshwater and **salt-tolerant** species of *Chara*: antibody cross-reactions and phosphohydrolase activities. DUPLICATE 13

L10 ANSWER 20 OF 29 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI **Salt** stress responses of higher **plants**: The role of proton pumps and Na⁺/H⁺-antiporters.

=> d 11 ab

L10 ANSWER 11 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
AB During the early period of NaCl stress, Na⁺ accumulated mainly in roots

and sheaths (Table 1). Correspondingly, the **tonoplast** ATPase and **PPase** hydrolysis activity (Fig. 1), ATP- and PPi-dependent proton pump activity and Na^+/H^+ antiport activity in roots and sheaths increased significantly (Figs. 2, 3), but root and sheath growth was not inhibited (Table 1). During the later period of NaCl stress, Na^+ began to be transported to the shoots and accumulated in the blades (Table 1). At this time, proton pump activity and Na^+/H^+ antiport activity in the blades also began to increase (Figs. 2, 3), ratio of Na/K of the roots and sheaths increased (Table 1) and their **tonoplast** ATPase and **PPase** hydrolysis activity (Fig. 1), **tonoplast** proton pump activity and Na^+/H^+ antiport activity decreased (Figs. 2, 3). Correspondingly, root and sheath growth was reduced (Table 1). ATPase and **PPase** activities of the **tonoplast** vesicles decreased as the Na/K ratio in the reaction medium rose to higher than 1 (Figs. 4, 5). These results indicated that the **tonoplast** proton pump activity of nonhalophyte plays an important role in Na^+ accumulation in vacuoles and **salt tolerance** during the early period of **salt** stress.

=> d 11 so

L10 ANSWER 11 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
SO Zhiwu Shengli Xuebao (2000), 26(3), 181-188
CODEN: CWSPDA; ISSN: 0257-4829

=> d 12 ab

L10 ANSWER 12 OF 29 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN

AB Overexpression of the *Arabidopsis thaliana* vacuolar H^+ -**pyrophosphatase** (AVP1) confers **salt tolerance** to the **salt**-sensitive *enal* mutant of *Saccharomyces cerevisiae*. Suppression of **salt** sensitivity requires two ion transporters, the *Gef1* Cl^- channel and the *Nhx1* Na^+/H^+ exchanger. These two proteins colocalize to the prevacuolar compartment of yeast and are thought to be required for optimal acidification of this compartment. Overexpression of *AtNHX1*, the **plant** homologue of the yeast Na^+/H^+ exchanger, suppresses some of the mutant phenotypes of the yeast *nhx1* mutant. Moreover, the level of *AtNHX1* mRNA in *Arabidopsis* is increased in the presence of NaCl. The regulation of *AtNHX1* by NaCl and the ability of the **plant** gene to suppress the yeast *nhx1* mutant suggest that the mechanism by which cations are detoxified in yeast and **plants** may be similar.

=> d 12 so

L10 ANSWER 12 OF 29 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN
SO Proceedings of the National Academy of Sciences of the United States of America, Feb 16, 1999. Vol. 96, No. 4. p. 1480-1485
Publisher: Washington, D.C. : National Academy of Sciences,
CODEN: PNASA6; ISSN: 0027-8424

=> d 20 ab

L10 ANSWER 20 OF 29 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on

STN

AB In salt-stressed higher plants NaCl may either be excluded from the cells or sequestered into the vacuole. Different pathways may dominate in different plants and different organs of the same plant. The proteins involved in salt transport across the plasma membrane and the tonoplast i.e. proton pumps and Na⁺/H⁺-antiporters have been identified. Progress in cloning of the P-type H⁺-ATPase, the V-type H⁺ATPase, and the vacuolar H⁺-PP-ase has provided important tools for the study of the molecular mechanisms involved in ion sequestration. However, not a single plant has as yet been studied in sufficient detail to allow a comprehensive evaluation of the relative importance of individual transport processes for the salt tolerance of an intact plant. This review summarizes our present as yet limited knowledge and identifies promising areas for future research.

=> d 20 so

L10 ANSWER 20 OF 29 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
SO Journal of Plant Physiology, (1996) Vol. 148, No. 3-4, pp. 425-433.
CODEN: JPPHEY. ISSN: 0176-1617.

=> d 21-29 ti

L10 ANSWER 21 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 14
TI Effects of salt stress on H⁺-ATPase and H⁺-PPase activities of tonoplast-enriched vesicles isolated from sunflower roots

L10 ANSWER 22 OF 29 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN DUPLICATE 15
TI Vacuolar H⁽⁺⁾-translocating pyrophosphatase is induced by anoxia or chilling in seedlings of rice.

L10 ANSWER 23 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
TI Quantitative stress responses of the V0V1-ATPase of higher plants detected by immuno-electron microscopy

L10 ANSWER 24 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 16
TI Enhanced K⁺-stimulated pyrophosphatase activity in NaCl-adapted cells of Acer pseudoplatanus

L10 ANSWER 25 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 17
TI Enhanced activity of tonoplast pyrophosphatase in sodium chloride grown cells of Daucus carota

L10 ANSWER 26 OF 29 CAPLUS COPYRIGHT 2004 ACS on STN
TI Lateral and rotational mobilities of lipids in specific cellular membranes of Eucalyptus gunnii cultivars exhibiting different freezing tolerance

L10 ANSWER 27 OF 29 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN
TI Molecular markers for ion compartmentation in cells of higher plants. I. Isolation of vacuoles of high purity.

L10 ANSWER 28 OF 29 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on

STN

TI MOLECULAR MARKERS FOR ION COMPARTMENTATION IN CELLS OF HIGHER
PLANTS I. ISOLATION OF VACUOLES OF HIGH PURITY.

L10 ANSWER 29 OF 29 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN

TI Protective effect of exogenous polyamines on root **tonoplast** function against **salt** stress in barley seedlings.

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L11 49 ((GAXIOLA, R?) OR (GAXIOLA R?))./AU

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PROCESSING COMPLETED FOR L11
L12 24 DUP REM L11 (25 DUPLICATES REMOVED)

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L12 ANSWER 1 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genetic engineering cotton for higher drought- and salt-tolerance

L12 ANSWER 2 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1
TI Yeast hygromycin sensitivity as a functional assay of cyclic nucleotide gated cation channels

L12 ANSWER 3 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Salt Stress Proteins Identified by a Functional Approach in Yeast

L12 ANSWER 4 OF 24 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Frequency of Pvull (LPL) genetic polymorphism in patients with Arterial Coronary Disease from Mexican population.

L12 ANSWER 5 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2
TI GSTT1 gene deletion is associated with lung cancer in Mexican patients

L12 ANSWER 6 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Functional genomics of salt tolerance: The yeast overexpression approach

L12 ANSWER 7 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Enhanced meristematic activity and competence by overexpression of tonoplast pyrophosphatase

L12 ANSWER 8 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN DUPLICATE 3
TI Genetic manipulation of vacuolar proton pumps and transporters.

L12 ANSWER 9 OF 24 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Over-expression of the vacuolar H⁺-pump AVP1 positively affects growth and development in Arabidopsis.

L12 ANSWER 10 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN DUPLICATE 4
TI Drought- and salt-tolerant plants result from overexpression of the AVP1 H⁺-pump.

=> d ab

L12 ANSWER 1 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

AB Drought and salinity are two major limiting factors in crop productivity. The drought-caused crop loss was over \$1 billion annually in Texas, of which about half resulted from cotton loss. Besides drought, saline water and soils also contribute to the reduction in cotton yield and fiber quality in America's Southwest. One way to reduce cotton loss caused by drought and salinity is to increase solute concentration in the vacuoles of cotton cells,

so that the solute potential is more neg. inside cells, resulting in water to move into cells and avoiding accumulation of sodium ion to toxic level in cytoplasm, therefore better water retention and higher salt tolerance can be achieved. The success of this approach was demonstrated in various plants by overexpressing the *Arabidopsis* genes *AtNhx1* that encodes a sodium/proton antiporter and *AVP1* that encodes a proton pump.

Overexpression of *AtNhx1* increases vacuolar uptake of sodium, whereas overexpression of *AVP1* generates higher proton electrochem. gradient (PEG) across the vacuolar membrane that energizes secondary transporters including *AtNhx1*, both of which lead to increased vacuolar solute concentration and therefore higher salt- and drought-tolerance in transgenic plants. In an effort to engineer cotton for higher drought- and salt-tolerance, transgenic cotton plants that express *AtNhx1* were created. Since *AtNhx1* activity depends on PEG generated by proton pumps like *AVP1*, a coupled overexpression of *AtNhx1* and *AVP1* would potentially confer higher tolerance against drought and salt in transgenic plants. Therefore creating another transgenic cotton line that expresses the *Arabidopsis AVP1* gene is also underway. It is hoped that *AtNhx1*- and *AVP1*-double overexpression cotton will be more drought- and salt-tolerant.

=> d so

L12 ANSWER 1 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

SO Proceedings - Beltwide Cotton Conferences (2004) 1149-1152
CODEN: PCOCEN; ISSN: 1059-2644

=> d 3 ab

L12 ANSWER 3 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

AB A review. We have performed functional genomics of salt stress by overexpression of gene libraries in yeast and selection for salt tolerance. Thirty halotolerance genes were isolated from yeast, *Arabidopsis*, and sugar beet. The results indicate that Na^+ transport (uptake, efflux, and compartmentation), sulfate activation, RNA processing, and protein synthesis are crucial for salt tolerance.

=> d 3 so

L12 ANSWER 3 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

SO Monatshefte fuer Chemie (2003), 134(11), 1445-1464
CODEN: MOCMB7; ISSN: 0026-9247

=> d 8 ab

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DUPLICATE 3

=> d 8 so

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(2004) on STN DUPLICATE 3

SO Plant physiology, July 2002. Vol. 129, No. 3. p. 967-973
Publisher: Rockville, MD : American Society of Plant Physiologists, 1926-
CODEN: PLPHAY; ISSN: 0032-0889

=> d 10 ab

L12 ANSWER 10 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 4

AB Transgenic plants overexpressing the vacuolar H⁽⁺⁾-pyrophosphatase are much more resistant to high concentrations of NaCl and to water deprivation than the isogenic wild-type strains. These transgenic plants accumulate more Na⁽⁺⁾ and K⁽⁺⁾ in their leaf tissue than the wild type. Moreover, direct measurements on isolated vacuolar membrane vesicles derived from the AVP1 transgenic plants and from wild type demonstrate that the vesicles from the transgenic plants have enhanced cation uptake. The phenotypes of the AVP1 transgenic plants suggest that increasing the vacuolar proton gradient results in increased solute accumulation and water retention. Presumably, sequestration of cations in the vacuole reduces their toxic effects. Genetically engineered drought- and salt-tolerant plants could provide an avenue to the reclamation of farmlands lost to agriculture because of salinity and a lack of rainfall.

=> d 11-20 ti

L12 ANSWER 11 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 5

TI Arabidopsis ALF5, a multidrug efflux transporter gene family member, confers resistance to toxins.

L12 ANSWER 12 OF 24 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

TI Increased size, salt and drought tolerance in A. thaliana overexpressing AVP1 vacuolar H⁽⁺⁾-pyrophosphatase.

L12 ANSWER 13 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

TI Root-specific protein EIR1 involved in auxin transport, Arabidopsis and rice cDNA and genomic sequences, and uses

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(2004) on STN DUPLICATE 6

TI The Arabidopsis thaliana proton transporters, AtNhx1 and Avp1, can function in cation detoxification in yeast.

L12 ANSWER 15 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 7

TI A Selaginella lepidophylla trehalose-6-phosphate synthase complements growth and stress-tolerance defects in a yeast tps1 mutant.

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(2004) on STN

DUPLICATE 8

TI The yeast CLC chloride channel functions in cation homeostasis.

L12 ANSWER 17 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 9

TI EIR1, a root-specific protein involved in auxin transport, is required for gravitropism in *Arabidopsis thaliana*

L12 ANSWER 18 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2004) on STN

DUPLICATE 10

TI A halotolerant mutant of *Saccharomyces cerevisiae*.

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(2004) on STN

DUPLICATE 11

TI Construction of a CUP1 promoter-based vector to modulate gene expression of *Saccharomyces cerevisiae*.

L12 ANSWER 20 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

TI Crucial reactions for salt tolerance in yeast

=> d 12 ab

L12 ANSWER 12 OF 24 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

=> d 12 so

L12 ANSWER 12 OF 24 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

SO Plant Biology (Rockville), (2001) Vol. 2001, pp. 85. print.
Meeting Info.: Joint Annual Meetings of the American Society of Plant Biologists and the Canadian Society of Plant Physiologists. Providence, Rhode Island, USA. July 21-25, 2001. American Society of Plant Biologists; Canadian Society of Plant Physiologists.

=> d 14 ab

L12 ANSWER 14 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2004) on STN

DUPLICATE 6

AB Overexpression of the *Arabidopsis thaliana* vacuolar H⁺-pyrophosphatase (AVP1) confers salt tolerance to the salt-sensitive *enal* mutant of *Saccharomyces cerevisiae*. Suppression of salt sensitivity requires two ion transporters, the Gef1 Cl⁻ channel and the Nhx1 Na⁺/H⁺ exchanger. These two proteins colocalize to the prevacuolar compartment of yeast and are thought to be required for optimal acidification of this compartment. Overexpression of AtNhx1, the plant homologue of the yeast Na⁺/H⁺ exchanger, suppresses some of the mutant phenotypes of the yeast *nhx1* mutant. Moreover, the level of AtNhx1 mRNA in *Arabidopsis* is increased in the presence of NaCl. The regulation of AtNhx1 by NaCl and the ability of the plant gene to suppress the yeast *nhx1* mutant suggest that the mechanism by which cations are detoxified in yeast and plants may be similar.

=> d 14 so

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SO Proceedings of the National Academy of Sciences of the United States of America, Feb 16, 1999. Vol. 96, No. 4. p. 1480-1485
Publisher: Washington, D.C. : National Academy of Sciences, CODEN: PNASA6; ISSN: 0027-8424

=> d 21-24 ti

L12 ANSWER 21 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN DUPLICATE 12

TI Microbial models and salt stress tolerance in plants.

L12 ANSWER 22 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN DUPLICATE 13

TI Salt tolerance and methionine biosynthesis in *Saccharomyces cerevisiae* involve a putative phosphatase gene.

L12 ANSWER 23 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN DUPLICATE 14

TI A novel and conserved salt-induced protein is an important determinant of salt tolerance in yeast.

L12 ANSWER 24 OF 24 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

TI A SODIUM CHLORIDE REGULATED GENE INVOLVED IN SODIUM CHLORIDE TOLERANCE.

=> d 21 ab

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=> d 21 so

L12 ANSWER 21 OF 24 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN DUPLICATE 12

SO Critical reviews in plant sciences, 1994. Vol. 13, No. 2. p. 121-138
Publisher: Boca Raton, Fla. : CRC Press, [c1983-
CODEN: CRPSD3; ISSN: 0735-2689